Teaching Philosophy and Classroom Design

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Structure Yields Behavior

I view teaching and research as strongly interrelated features of academia with both attempting to elicit change, or at minimum create conditions conducive to future change, either in how students or a field of inquiry approach a problem. I also fundamentally believe that the structure of a system is the primary influence on behavior that system elicits. Thus, I work on ensuring the structure of my classroom is designed to maximize the behaviors I am seeking in my students, all while continuously seeking feedback to improve for a changing future.

One of the privileges of teaching a group of students with diverse backgrounds is the opportunity to both enrich classroom discussion and learn from your students. However, these opportunities are only realized if the structure of the classroom allows for such communication to occur freely. Engaging in two-way communication is a fundamental piece of my approach to teaching any course, including the highly technical. Being challenged on what is being presented in class is not only a thrill, but also an opportunity to improve the course in the future. However, such engagement is not a guaranteed feature of a class but rather an outcome of the other design choices I take as an instructor. I want to be an expert in the material I am communicating, but I also must be humble and engage my students on their level and allow for learners with varying degrees of comfort in public speaking to engage. For me, this results in a large amount of preparation in designing my course and the material that supports it, including the tone and pacing, as well as being proactively available outside of classroom hours.

> "…his humility, humor, and friendly personality all come through during his presentations… he can discern the obstacle our understanding and can readily untangle any knot we find ourselves in." *System Dynamics for Business and Policy – Fall 2021*

Backward Design and Continuous Improvement

As part of my training at MIT Sloan School of Management, I participated in the *Kaufmann Teaching Certificate Program*, one of the few formal settings in MIT on pedagogy. In this program, I learned that some of what I had discovered on my own during my prior work in Industry developing introductory Lean Six Sigma classes was not only good practice in academia but also had a name: 'Backward Design'.

Backward Design is a teaching approach centered around first identifying the end goals of a class (e.g., asking how I want my students to change over this course), and then systematically breaking that overarching series of goals into manageable subunits and then into measurable assessments and checkpoints. While this seems like an obvious design choice, it can be surprisingly hard to take this wider view rather than optimizing on a more short-term horizon.

It is not always possible nor feasible to design a course from the beginning via a backwards design approach, especially when taking on a course that is long established. Even with well-established courses that have long been taught at an institution, the opportunity exists to support a backward design approach by continuously assessing how the students are progressing towards the overarching goals of the class. As part of my work supporting *15.768 – Service Operations Management*, we polled the class halfway through to assess if our learning outcomes were being met and adjusted the course to the degree we could for the rest of the year. More importantly, we also did a similar poll at the end of the year and spent time before the start of the new semester looking not only at recent responses, but also historic responses to identify trends in both students needs and our

own teaching habits. This self-reflection not only improved the class, but also our teaching, forcing us to stay relevant with student needs. This effort was also noticed by the students:

> "He was helpful and thoughtful and patient, and it was helpful to hear from his experiences… Thank you for the time commitment that you made and for all the effort that you put into making this course run smoothly." *15.768 - Management of Services: Concepts, Design, and Delivery – Fall 2019*

Using my prior experience in both Industry and in Academia, along with the Backward Design approach, I have begun developing my own course, *Business Systems Design* that melds together aspects of a Business Analytics course with the endogenous systems level approach utilized in System Dynamics. The goal of this course is not only to teach the fundamental tools and language of statistical and systems analysis, but also emphasize the identification of high leverage policies and the communication methods that will maximize the likelihood of those policies being implemented. The purpose of teaching in a business school or similar environment is not only to give people the tools necessary to make high quality decisions, but also to help communicate those decisions effectively.

Flexible Classrooms and Flexible Approaches

During the Spring of 2020 MIT, along with much of the rest of the world, shut down in response to the Coronavirus pandemic. Much of my formal teaching experience occurred after that shock, giving me extensive experience with both fully remote and later hybrid classroom designs. In addition to gaining a new appreciation for the more subtle value that comes from in-person instruction, what I learned most is that fundamentally good teaching can work and thrive under any classroom configuration. The shock presented an unexpected opportunity remove some entrenched approaches and reassess the fundamental goals of the classes. In the *Management of Services* course, which was highly dependent on case discussions and interaction, this resulted (after much experimentation) in novel configurations of the remote setup and class participation system. In *System Dynamics for Business and Policy* this result in much less expectations for in-class interaction and much more outside class support, including using new discussion-board tools.

For both classes, the shock of shifting classroom configurations reinforced the value of rapid and actionable feedback for students. Student always need timely feedback as a form of scaffolding to help self-assessment and improvement, and in a changing environment we as the instructors needed feedback quickly as well. The use of automated feedback on large assignments helped reduce the cycle of feedback to near instantaneous in the *System Dynamics* courses and allowed us to rapidly see what areas needed more clarification. From the students perspective, this was largely seamless, but was supported by careful planning and an ability to be flexible in our approach as data came in. As said by one student during the height of the disruptions at MIT:

> "Really appreciate the simple explanations to questions that make the knowledge digestible. You should go into teaching!" *System Dynamics for Business and Policy – Fall 2020*

Going Forward

I view teaching as a great privilege, and my approach follows from the same expectations I place on my approach to research. Like research, teaching should not be a single event but rather a catalyst that sets the student along a path towards future learning. My own teaching philosophy is not static, but will continue to evolve with new information and changing times. However, no matter how my approach changes, I will hold earning a version of the statement below as my overarching goal:

> "I left each session being thankful for the opportunity to learn at MIT."
> *System Dynamics for Business and Policy – Fall 2021*